

FIG. 1

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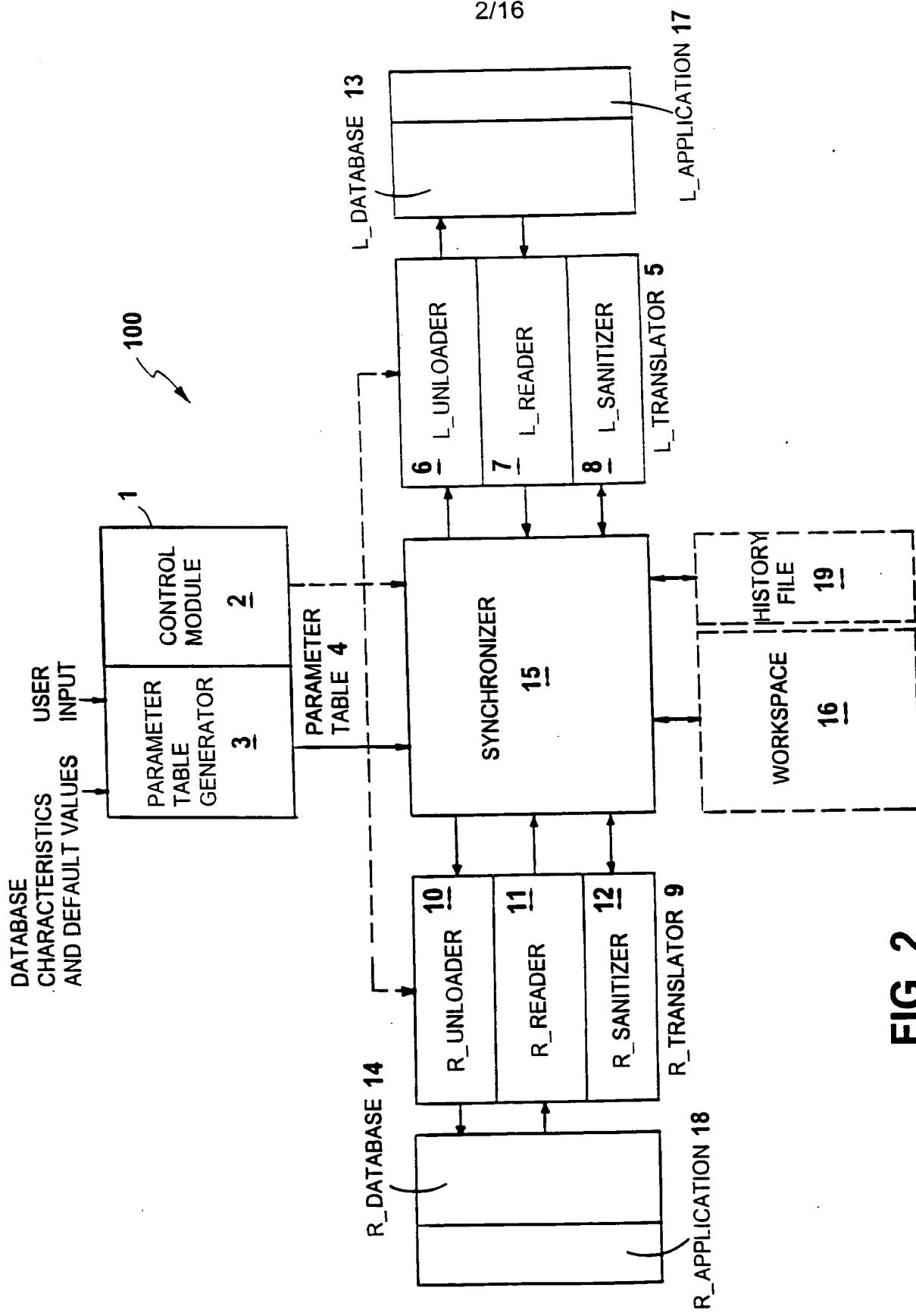


FIG. 2

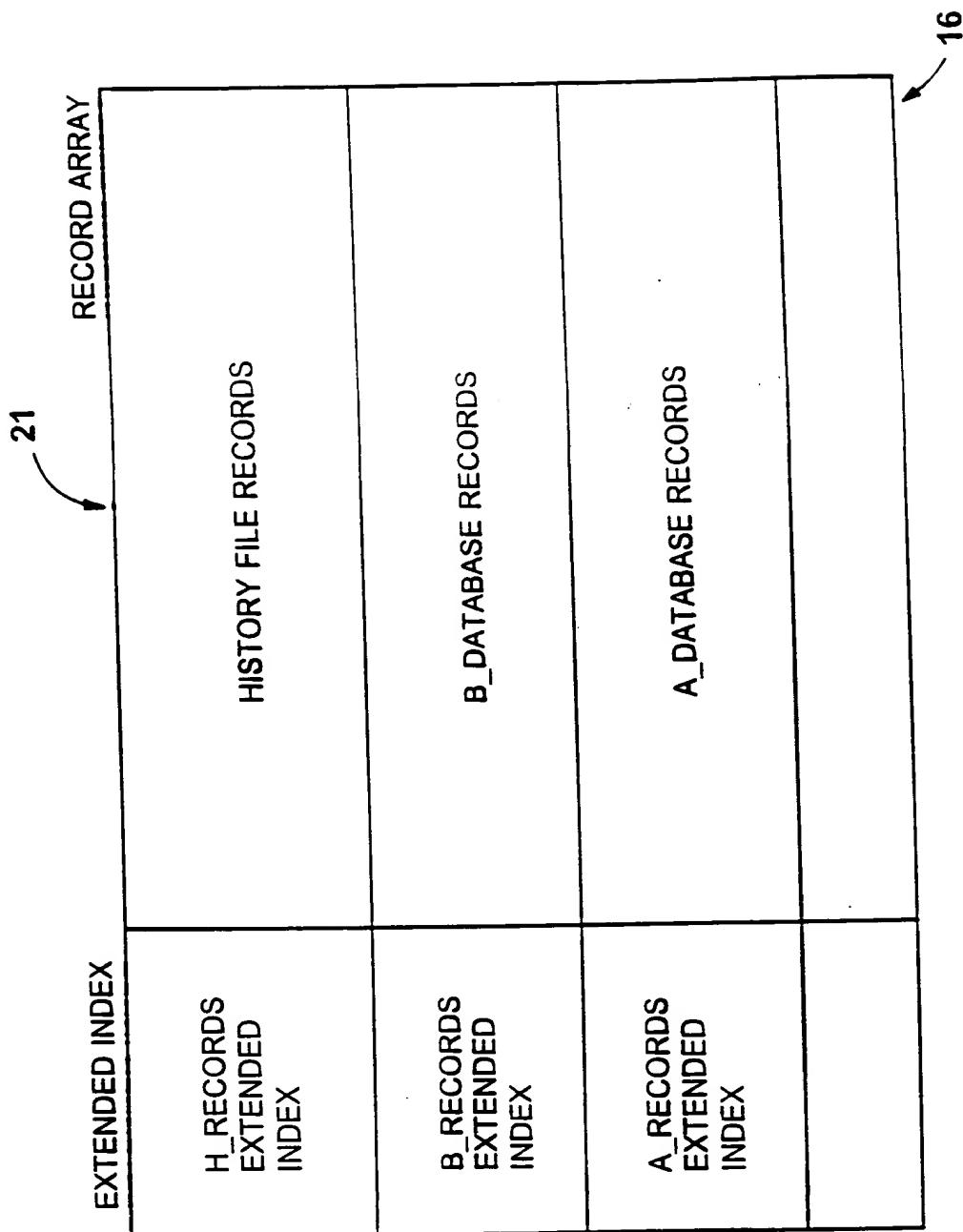


FIG. 3

Pseudo Code for Translation Engine Control Module

100. INSTRUCT parameter table generator to create parameter table and initialize filter
101. INSTRUCT Synchronizer to initialize itself
102. INSTRUCT Synchronizer to LOAD the History_file into its WORKSPACE
103. INSTRUCT R_Translator to LOAD R_records from R_Database
104. INSTRUCT L_Translator to SANITIZE R_records that were just LOADED
105. INSTRUCT L_Translator to LOAD L_Records from L_Database and SEND to Synchronizer
106. INSTRUCT R_Translator to SANITIZE L_Records that were just LOADED.
107. INSTRUCT Synchronizer to do CAAR (Conflict Analysis And Resolution) on all the records in WORKSPACE.
108. INFORM user exactly what steps Synchronizer proposes to take (i.e. Adding, Changing, and Deleting records). WAIT for User.
IF User inputs NO, then ABORT.
109. INSTRUCT R_Translator to UNLOAD all applicable records to R_Database.
110. INSTRUCT L_Translator to UNLOAD all applicable records to L_Database.
111. INSTRUCT Synchronizer to CREATE a new History File.
112. INSTRUCT Synchronizer to

FIG. 4

Pseudocode for Generating Parameter Table

```
{Get Input from the user}
150.  ASK user to select whether to use a filter expression
151.  IF the user selected to use a filter THEN
152.    IF a new filter to be used THEN
153.      Obtain from the user filter name
154.      Obtain filter expression
155.      STORE the current date and time in the FILTER_CHANGED_TIMESTAMP
          parameter

156.      Assign a unique filter ID to the filter
157.      ELSE Obtain from the user filter name
158.        retrieve the filter expression and unique filter ID
159.        IF user selects to edit the filter THEN display the filter and obtain edits
160.        SET FILTER_ID parameter to unique filter ID code of the selected filter
161.        SET USE_FILTER flag
162.        PARSE the filter expression into a filter token array
163.    END IF
164.  CREATE parameter table
```

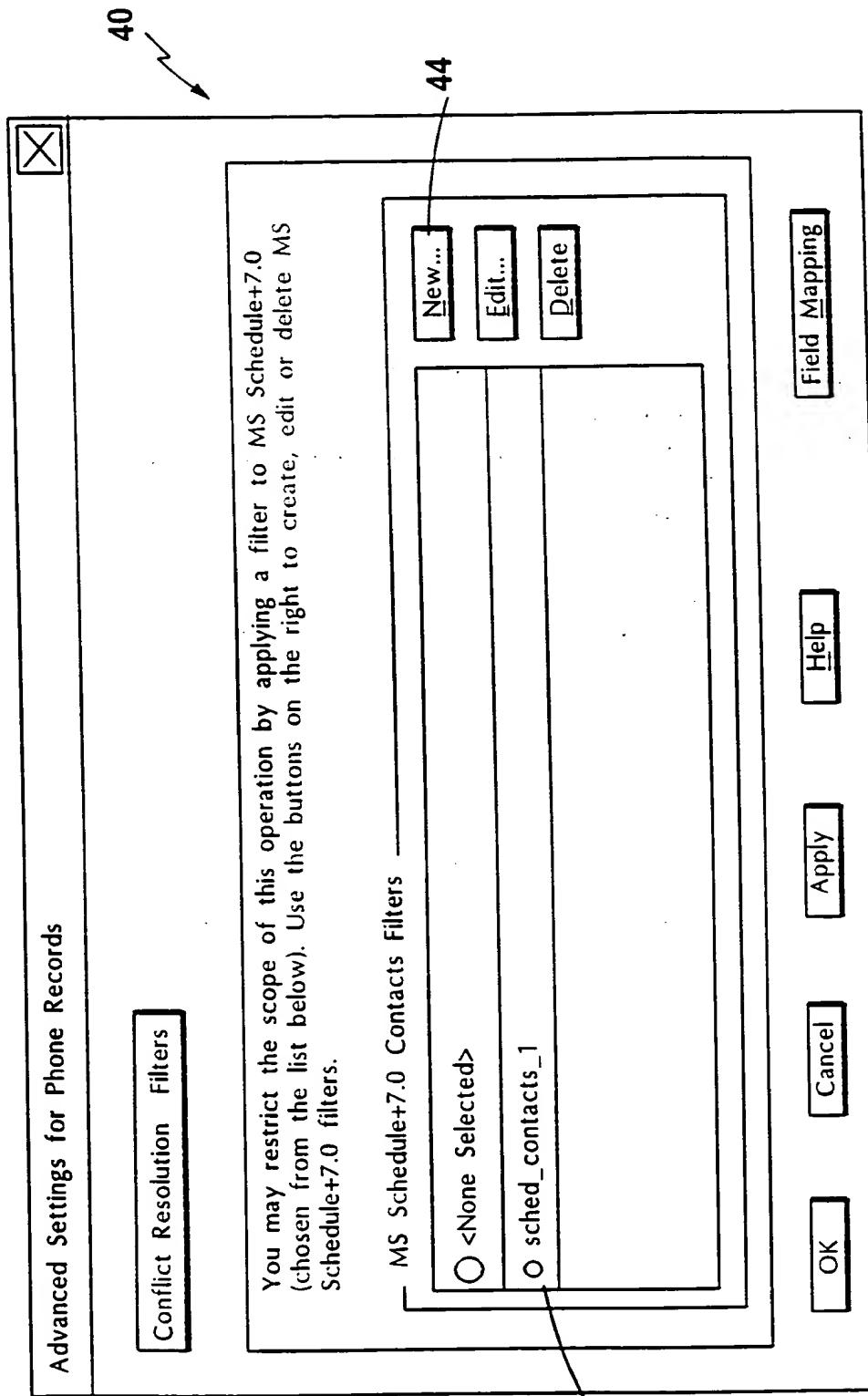


FIG. 6

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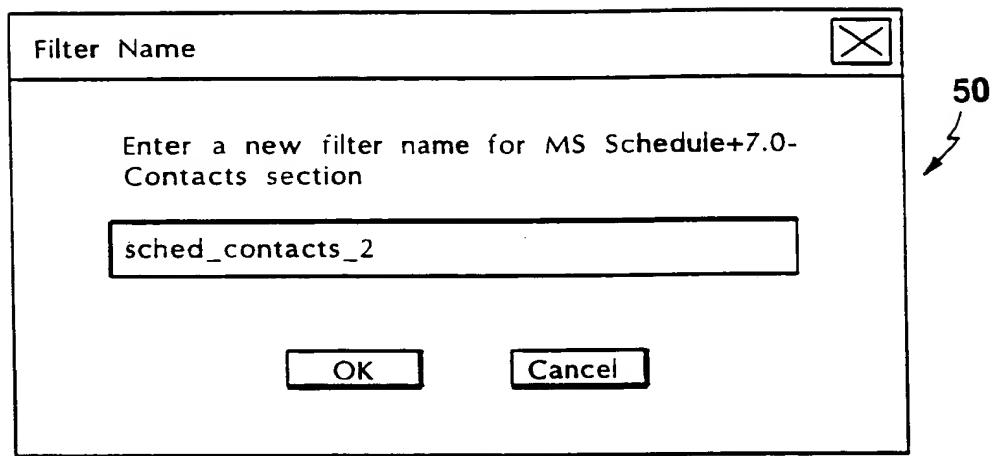


FIG. 7

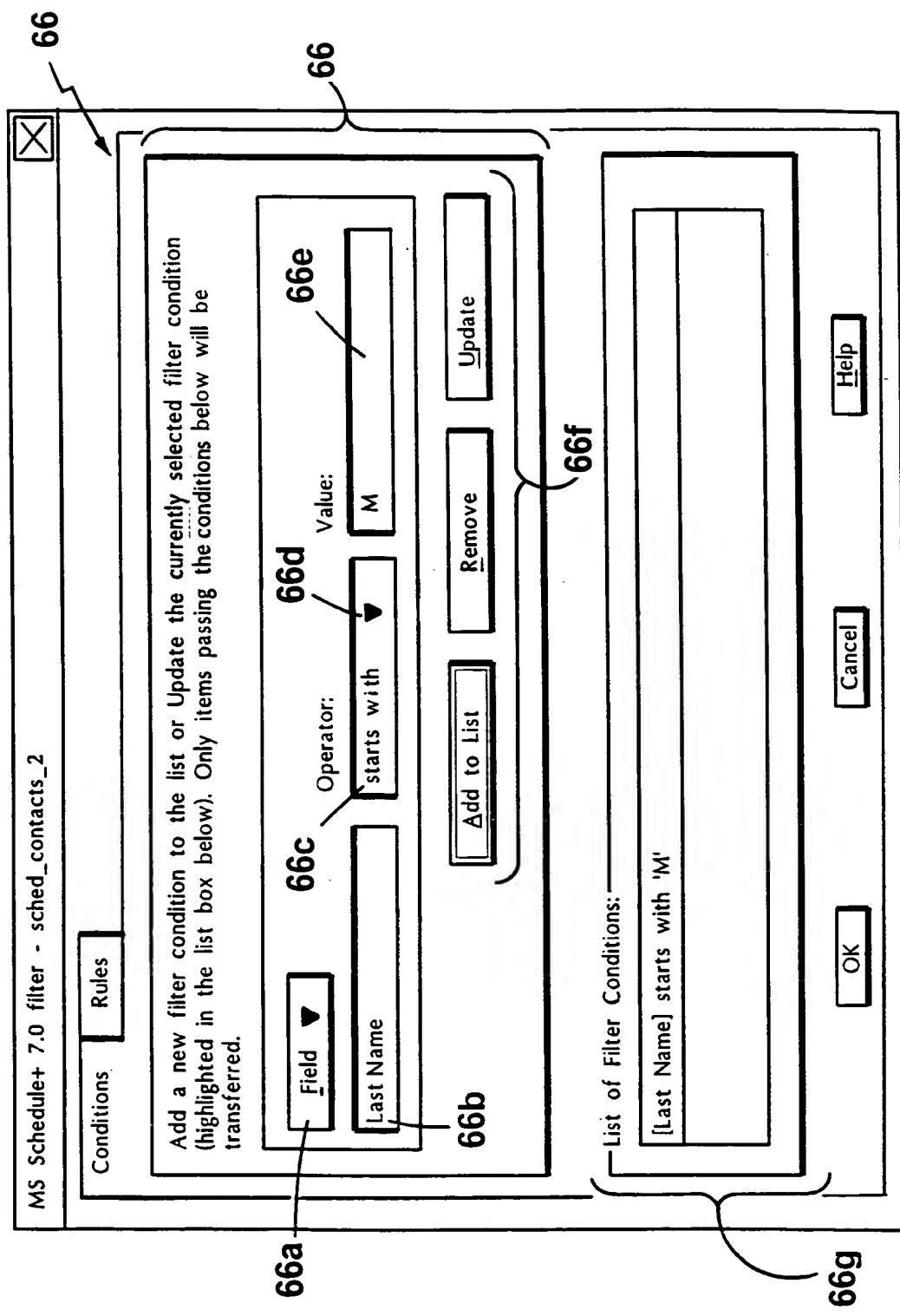


FIG. 8

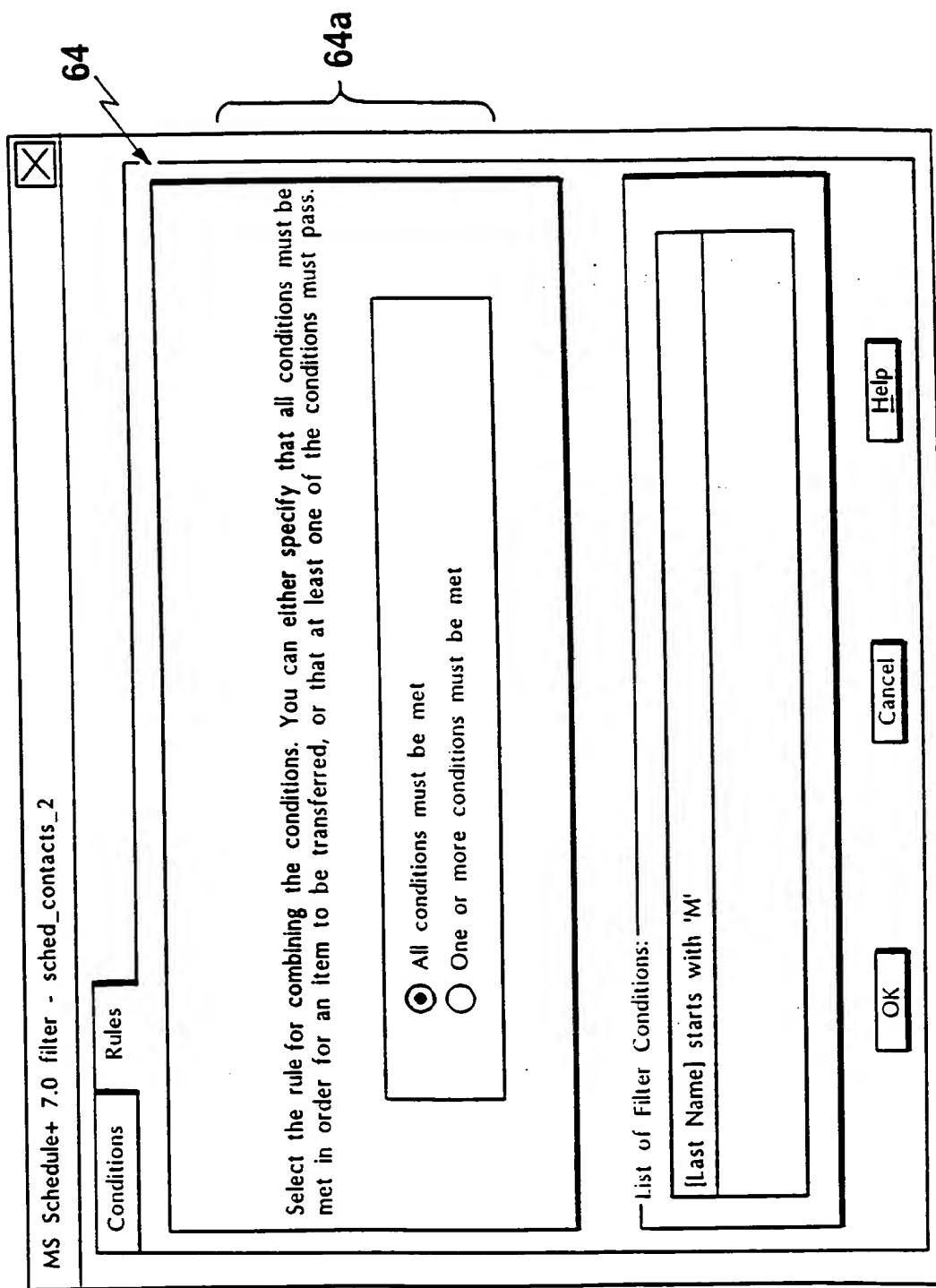


FIG. 9

Filter language specification

Expression = *Condition1* [AND *Condition2*] ... [OR *Condition3*] ...

Condition = *ARG1* *OP* *ARG2*

OP = *OP_SET_1* | *OP_SET_2* | *OP_SET_3* | *OP_SET_4* | *OP_SET_5* | *OP_SET_6*

OP_SET_1 = *EQ* | *LE* | *GE* | *NE* | *LT* | *GT*

OP_SET_2 = *OP_SET_1* *TODAY* - | *OP_SET_1* *TODAY* +

OP_SET_3 = *OP_SET_1* *NOW* - | *OP_SET_1* *NOW* +

OP_SET_4 = *STARTS_WITH* | *CONTAINS* | *DOES_NOT_CONTAIN* | *IS_EMPTY* | *IS_NOT_EMPTY*

OP_SET_5 = + | - | * | / | %

OP_SET_6 = *IS*

For Dates - ARG1 *OP* *ARG2*:

<i>[Date Fieldname]</i>	<i>OP_SET_1</i>	'YYYYMMDD'
<i>[Date Fieldname]</i>	<i>OP_SET_2</i>	integer

For Times - ARG1 *OP* *ARG2*

<i>[Time Fieldname]</i>	<i>OP_SET_1</i>	'HHMM'
<i>[Time Fieldname]</i>	<i>OP_SET_3</i>	integer

For TextStrings - ARG1 *OP* *ARG2*

<i>[String Fieldname]</i>	<i>OP_SET_1</i>	'textstring'
<i>[String Fieldname]</i>	<i>OP_SET_4</i>	'textstring'

For Booleans - ARG1 *OP* *ARG2*

<i>[Boolean Fieldname]</i>	<i>OP_SET_6</i>	TRUE
<i>[Boolean Fieldname]</i>	<i>OP_SET_6</i>	FALSE

For Numbers - ARG1 *OP* *ARG2*

<i>[Number Fieldname]</i>	<i>OP_SET_1</i>	integer
<i>[Number Fieldname]</i>	<i>OP_SET_5</i>	float

FIG. 10

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200. FOR each Record in history file
201. Load record
202. Write record to Workspace
203. Next

FIG. 11

```

300. IF Use_Filter = TRUE and R_Application_Is_Filtering = FALSE THEN
301.   FOR each Record in the remote database
302.     Load record
303.     Filter the loaded record
304.     IF record passes the filter THEN mark as PASSED_FILTER
305.     ELSE mark as FAILED_FILTER
306.     Send record to synchronizer
307.     In Synchronizer: Write record to Workspace
308.   Next
309. ELSE IF Use_Filter = TRUE and R_Application_Is_Filtering = TRUE THEN
310.   Send the filter expression to R_Application
311.   Load filtered records
312.   IF the record passes current filter THEN Mark as PASSED_FILTER ELSE Mark as
313.     FAILED_FILTER
314.     Send records to synchronizer
315.     In Synchronizer: Write records to Workspace
END IF

```

FIG. 12

- 350. Form all records in the workspace into CIGs
- 351. For each CIG
 - 352. Compare the records in CIG
 - 353. Determine synchronization outcome
 - 354. If a synchronization outcome is a conflict THEN
 - 355. If one of the database records in the CIG does not pass the current filter, THEN skip CIG and mark results as DO NOT UPDATE any of the records
 - 356. ELSE resolve conflict by reference to a user-selected rule or input from the user
 - 357. END IF
 - 358. If the most up to date record fails the filter, THEN mark all records as having failed the current filter
 - 359. If the filter expressions contains an unmapped field and one of the database records in the CIG are marked as having failed the filter, THEN mark all records as having failed the filter
 - 360. If a fanned out recurring record is partially outside of the current filter, THEN mark the record to be fanned when being unloaded and delete previous fanned nonrecurring records
- 361. Next

FIG. 13

400. FOR each remote database record
401. IF Use_Filter = TRUE and the filter is a static filter THEN
402. IF record is marked as FAILED_FILTER THEN
403. Delete record on the remote database
404. Else IF the record is marked as PASSED_FILTER THEN add, delete, or modify
record according to results of synchronization obtained during CAAR analysis
405. ELSE IF Use_Filter = TRUE and the filter is a dynamic filter THEN
406. IF record fails the current filter THEN
407. Delete record on the remote database
408. Else IF the record passes the current filter THEN add, delete, or modify record
according to results of synchronization obtained during CAAR analysis
409. END IF
410. Next

FIG. 14

450. FOR each local database record
451. IF Use_Filter = TRUE and the filter is a static filter THEN
452. IF record is marked as FAILED_FILTER THEN
453. IF CAAR outcome is to modify the record then modify the record on the
 local database
454. Else IF the record is marked as PASSED_FILTER THEN add, delete, or modify
 record according to results of synchronization obtained during CAAR analysis
455. ELSE IF Use_Filter = TRUE and the filter is a dynamic filter THEN
456. IF record fails the current filter but marked as PASSED_FILTER THEN
457. IF CAAR outcome is to modify the record then modify the record on the
 local database
458. Else IF the record passes the current filter THEN add, delete, or modify record
 according to results of synchronization obtained during CAAR analysis
459. END IF
460. Next

FIG. 15

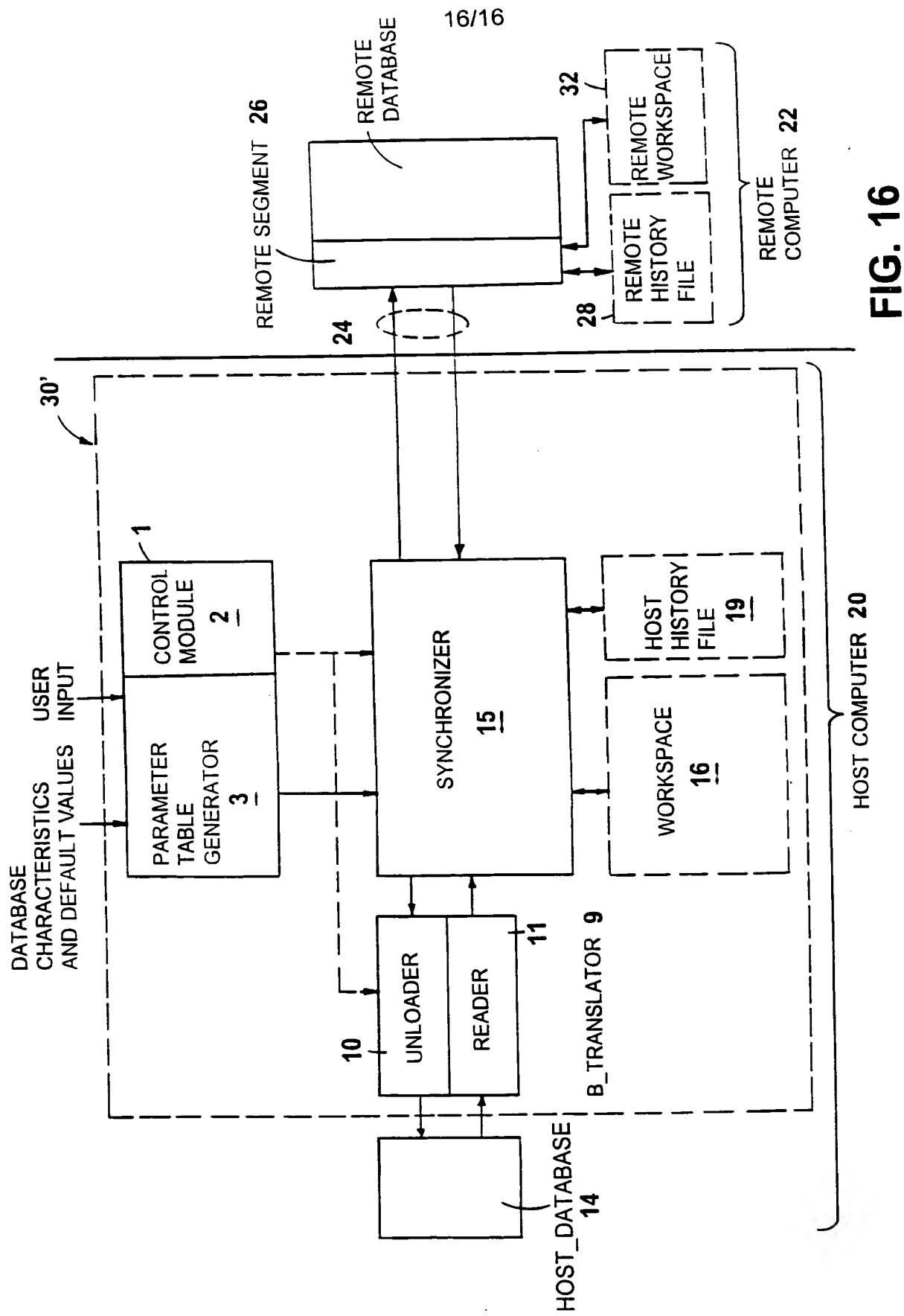


FIG. 16